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10/608,704

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John Thomas Pawlak

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Siemens Corporation  
Intellectual Property Department  
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EXAMINER

BAKER, DAVID S

ART UNIT

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07/27/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/608,704	<b>Applicant(s)</b> PAWLAK ET AL.	
	<b>Examiner</b> David S. Baker	<b>Art Unit</b> 2884	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 May 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-30 is/are pending in the application.  
     4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-10 and 25-30 is/are allowed.
- 6) ☒ Claim(s) 11, 13-20, 23 and 24 is/are rejected.
- 7) ☒ Claim(s) 12, 21 and 22 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 June 2003, 27 January 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

**DETAILED ACTION**

***Response to Amendment***

1. The amendment filed on 14 May 2007 has been accepted and entered.

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

1. Claims 11, 13-16, and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lonn (US 5,777,332 A) in view of Pierfitte (US 6,204,503 B1).

Regarding claim 11, Lonn discloses a method of orbital calculation the steps comprising: moving, relative to a patient, a detector in a direction toward a patient to a position adjacent to a patient based on an output of a proximity sensor that senses patient proximity to the detector (C:7 L:12-27); calculating an orbital path of the detector around the patient based upon the position adjacent to the patient (C:8 L:18-55); and using the

calculated orbital path to move the detector about the patient to obtain imaging data of the patient (C:5 L:14-36). Lonn does not disclose expressly the use of a second detector head. Pierfitte disclose a tomographic acquisition method employing two detector heads (C:1 L:62 thru C:2 L:3, C:2 L:54-59). At the time the invention was made, it would have been obvious to use two detector heads for the method of Lonn resulting in a second moving steps for the second detector head and moving the second detector along the calculated orbital in order to obtain imaging data. The motivation for doing so would have been that by using a second detector, image resolution could be improved while detection time could be decreased.

Regarding claim 13, Lonn discloses an tomographic scanning apparatus comprising: a detector element to detect inside a patient (C:1 L:62 thru C:2 L:3, C:2 L:54-59); a sensor element to sense patient proximity to the detector element (C:7 L:12-27); a first carrier mechanism to move the detector element to scanning and sensing positions (C:6 L:31-59); and a control unit configured to calculate an orbital path based on the detector element's reference positions (C:6 L:31-59). Lonn does not disclose expressly the use of a second detector head. Pierfitte disclose a tomographic acquisition apparatus employing two detector heads (C:1 L:62 thru C:2 L:3, C:2 L:54-59). At the time the invention was made, it would have been obvious to use two detector heads in the apparatus of Lonn resulting in a second detector head, a second sensor element, and a second carrier mechanism. The motivation for doing so would have been that by using a second detector, image resolution could be improved while detection time could be decreased.

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Regarding claim 14, Lonn discloses that the orbit is non-circular (F:2).

Regarding claim 15, Lonn discloses that the apparatus is a nuclear imaging apparatus (C:1 L:5-10).

Regarding claim 16, Lonn discloses that the apparatus varies the radius of the orbital path to reduce the distance from the detector elements to the patient (F:5 L:14-36).

Regarding claims 18-19, Pierfitte discloses that the detector heads may be positioned approximately ninety degrees from one another (F:3a-3c).

Regarding claim 20, Lonn discloses that the detector is pitched downward, with respect to the patient, or closer to the patient (C:7).

2. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lonn (US 5,777,332 A), Pierfitte (US 6,204,503 B1), and further in view of Gagnon (US 6,147,353 A).

Regarding claim 17, Lonn and Pierfitte do not disclose expressly that the detectors are parallel-hole collimated detectors. Gagnon discloses a dual-headed tomography camera with parallel-hole collimation. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use parallel-hole collimation in the invention as described by Lonn in view of Pierfitte in order to improve image focus for better resolution.

3. Claims 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lonn (US 5,777,332 A), Pierfitte (US 6,204,503 B1), and further in view of Stephan (US 5,677,535 A).

Regarding claims 23 and 24, Lonn and Pierfitte do not disclose expressly a first sensor or second sensor emitting a light beam that is broken by proximity to a patient.

Stephan discloses (F:2, C:3 L:15-49) a first sensor (7) emitting a light beam (13, 14, 15) that is broken by proximity to a patient (10). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use a parallel light beam sensor to measure patient to detector distances in the invention as described by Lonn in view of Pierfitte. The motivation for doing so would have been the fact that this system would provide a contactless and automatic means for allowing the detector to be as close as possible to the patient during scanning that would improve sensing speed and precision..

*Allowable Subject Matter*

4. Claims 1-10 and 25-30 are allowed.
5. Claims 12 and 21-22 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
6. The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim 1, the prior art of record does not disclose or reasonably suggest, along with the other claimed limitations, a non-circular orbit detection method the steps comprising: namely, storing a first sensing position; storing a second sensing position; and then calculating a non-circular orbit about a patient using said stored first and second sensing positions. For additional reasons of allowance, please refer to the previous office actions.

Regarding claims 2-10, the balance of claims is found allowable due to their dependence upon an already allowed claim and lacking any technical errors.

Regarding claim 12, the prior art of record does not disclose or reasonably suggest, along with the other claimed limitations, a method for orbital calculation the steps comprising: namely, performing the steps of claim 11 automatically. Prior art such as Lonn disclose an operator that initiates the system and also performs longitudinal movement of the patient table.

Regarding claim 21, the prior art of record does not disclose or reasonably suggest, along with the other claimed limitations, a non-circular orbit apparatus comprising: namely, wherein the first sensing direction is vertically downward. Prior art such as Lonn, teaches away from a vertical first direction, preferring to make the first direction inwards from the plane of the table surface so as to allow the patient to leave the table easily, if necessary, before the tomographic scan begins.

Regarding claim 22, the balance of claims is found to contain allowable subject matter due to their dependence upon a claim that already contains allowable subject matter.

Regarding claim 25, the prior art of record does not disclose or reasonably suggest, along with the other claimed limitations, a non-circular orbit calculator comprising: namely, means for storing positions of first and second detector elements when the sensors respectively detect first and second points of a patient; and means for calculating a non-circular orbit about the patient based on the stored positions of the first and second detector elements.

Regarding claim 26, the balance of claims is found allowable due to their dependence upon an already allowed claim and lacking any technical errors.

Regarding claim 27, the prior art of record does not disclose or reasonably suggest, along with the other claimed limitations, a method for nuclear medicine imaging with at least one detector following a non-circular orbit the steps comprising: automatically determining a plurality of orbital locations; and automatically predetermining a non-circular orbit. Prior art such as Lonn teaches the determining a plurality of orbital locations and predetermining a non-circular orbit, but Lonn does not disclose or reasonably suggest the automation of the process. Prior art such as Lonn actually teaches away from automation by disclosing the presence of a table operator that controls various aspects of the imaging process.

Regarding claims 28-30, the balance of claims is found allowable due to their dependence upon an already allowed claim and lacking any technical errors.

***Response to Arguments***

7. Applicant's arguments, see page 1 of the amendment, filed 14 May 2007, with respect to the objection to claim 2 under 37 C.F.R. 1.75(c) and the rejection of claims 18-19 and 20-22 under 35 U.S.C. 112 have been fully considered and are persuasive. The objection/rejection of the claims has been withdrawn.

8. Applicant's arguments filed 14 May 2007 with respect to claims 11 and 13 have been fully considered but they are not persuasive.

Regarding claim 11, Applicant's argument that Lonn does not disclose moving the detector toward the patient is not persuasive. Lonn discloses "pitch[ing] the detector in to the patient table outline" and then "mark[ing] the position by pressing the SET key" (C:7 L:1-16). This is the method through which Lonn determines the reference positions.



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Lonn's steps 1-4 (C:7 L:3-6) are performed for each reference position after the detector has been pitched in and the reference position determined.

Regarding claim 13, Applicant's argument that Lonn does not disclose a carrier mechanism to move detector elements from a distal position to a proximate position is not persuasive. Lonn clearly discloses the ability for the detector to be pitched in from a distal to a proximate position by the teaching of "pitch[ing] the detector in to the patient table outline" (C:7 L:1-16). While this movement may not be automatic, the movement is still possible through the disclosed means. Additionally, if Lonn was deficient in this aspect of the instant invention, Pierfitte discloses a carrier mechanism capable of moving detector elements from distal to proximate positions (items 20 and 21, F:1). Applicant's argument that Lonn does not disclose a control unit to calculate an orbital path is also not persuasive. Lonn clearly discloses that the "system uses the positions of the axes at the four marked reference positions to produce an ellipse for the upper half of the outline" (C:7 L:12-16). The system of Lonn clearly satisfies the requirements of the control unit of the instant application.

### ***Conclusion***

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

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will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

US 6,020,589 A – Plazenet discloses a non-circular orbit method for nuclear imaging.


11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David S. Baker whose telephone number is (571) 272-6003. The examiner can normally be reached on MTWRF 9:30am-6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David P. Porta can be reached on (571) 272-2444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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